Remarks

Applicants have canceled claims 21-55, 57-70, and 73-74 without prejudice or disclaimer, and have also added claim 76-182 in order to claim additional embodiments of the elected group. Further, Applicants have amended the specification to add a sequence identifier reference to the description of Figure 2. Attached hereto is a marked-up version of the changes made to the specification by the current amendments, captioned "Version With Markings To Show Changes Made." The amendments are fully supported by the specification and claims as originally filed, and thus no new matter has been added.

Claims 76-182 will be pending upon entry of this amendment. Applicants respectfully request that the Examiner consider the above amendments and following remarks prior to the first office action on the instant continued prosecution application.

I. Amendment of the Specification

The specification has been amended to add a sequence identifier reference to the description of Figure 2. More particularly, on page 7, a reference was added to clarify that residues 191-516 of t-PA correspond to residues 1-325 of SEQ ID NO:3. This amendment is fully supported by the specification and claims as originally filed. Accordingly, no new matter has been added by way of amendment, and entry of the above amendment is respectfully solicited.

II. Objection to the Specification

In the previous Office Action, the Examiner objected to the specification because Figure 2 refers to residues 191-516 of t-PA, while the specification refers to the

corresponding residues of t-PA as residues 1-325 of SEQ ID NO:3. (*See* Paper No. 23, Pages 2-3).

In response, although Applicants respectfully disagree with the prior objection, Applicants have amended the description of Figure 2 on page 7 to indicate that residues 191-516 of t-PA correspond to residues 1-325 of SEQ ID NO:3, as suggested by the Examiner. (*See* Paper No. 23, Page 3). Applicants maintain that the numbering difference was necessitated by 37 C.F.R. § 1.822(d)(4), and that the description of Figure 2 would be clear to one skilled in the art. However, in light of the above, Applicants submit that the objection has been obviated, and it is respectfully requested that the objection to the specification not be maintained in the instant continued prosecution application.

III. Rejection of the Claims under 35 U.S.C. §§ 101 and 112, First Paragraph

In the previous Office Action, the Examiner rejected claims 21-55, 57-70, and 73-74 under 35 U.S.C. § 101 because the invention is allegedly not supported by either a specific and substantial asserted utility or a well established utility. (*See* Paper No. 23, Pages 3, 5-7.) In particular, the Examiner maintained the rejection on the basis that the assertion in the specification that t-PALP is useful for the same therapeutic uses as t-PA was not credible. The Examiner argued that:

> [t]here is no evidence of record or any line of reasoning that would support a conclusion that the t-PALP of the instant application was, as of the filing date, useful for treatment of various pathological conditions as indicated by Applicants.
>
> Paper No. 23, Page 6.

The Examiner further rejected claims 21-55, 57-70, and 73-74 under 35 U.S.C. § 112, first paragraph, because one skilled in the art would allegedly not know how to use the claimed

invention because it is supposedly not supported by either an asserted utility or a well established utility.

Applicants have canceled claims 21-55, 57-70, and 73-74, thereby obviating any prior rejection of those claims. However, Applicants respond to this rejection as it may be held to apply to new claims 76-182.

Applicants respectfully disagree with the prior rejections.

Applicants maintain that a rejection under 35 U.S.C. § 101 is improper when a person of ordinary skill in the art would find credible disclosed features or characteristics of the invention made by the Applicant in the written description of the invention. *See, e.g.,* Section II of the Response and Amendment filed January 25, 2001; M.P.E.P. §§ 2107.01(II) – (III) (7th Ed. Rev. 1, Feb. 2000). In addition, an Applicant need only make one credible assertion of specific utility for the claimed invention to satisfy 35 U.S.C. § 101. *See, e.g., Raytheon v. Roper*, 724 F.2d 951, 958, 220 U.S.P.Q. 592, 598 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 835 (1984) ("When a properly claimed invention meets at least one stated objective, utility under 35 U.S.C. § 101 is clearly shown.") ; *see also* M.P.E.P. § 2107.01 at 2100-29; Utility Examination Guidelines, 66 Fed. Reg. 1092, 1098 (January 5, 2001). Finding a lack of utility is also improper if a person of ordinary skill in the art would know of a use for the claimed invention at the time the application was filed. *See* M.P.E.P. § 2107.01(II)(B); Utility Examination Guidelines at 1098.

Moreover, the burden is on the Examiner to establish why it is more likely than not that one of ordinary skill in the art would doubt *(i.e.,* "question") the truth of the statement of utility. *See* M.P.E.P. § 2107.01(II)(A); Utility Examination Guidelines at 1098-99. Thus, the Examiner must provide evidence sufficient to show that the statement of asserted utility would be considered "false" by a person of ordinary skill in the art. *See id.*

The Examiner must also present countervailing facts and reasoning sufficient to establish that a person of ordinary skill would not believe the applicants' assertion of utility. *See id.*; *see also In re Brana,* 51 F.3d 1560, 34 U.S.P.Q.2d 1436 (Fed. Cir. 1995). For the reasons set forth below, the Examiner has not met the burden that is necessary to establish and maintain a rejection for lack of utility under 35 U.S.C. § 101.

Applicants point out that the Utility Examination Guidelines require an evaluation of the utilities taught in the closest prior art (in the instant case, t-PA). *See* Utility Examination Guidelines at 1098. However, the Examiner failed to address the substantial homology disclosed between t-PA and t-PALP (*see, e.g.,* page 2, lines 33-36; page 7, lines 28-29; page 9, lines 16-23; and Figure 2), presenting instead a conclusory argument that t-PALP has no biological significance based on homology absent further characterization. Applicants assert that this does not suffice to satisfy the Examiner's burden to make a *prima facie* showing that Applicants' asserted utility is not credible. Further, Applicants point out that the Examiner has failed to address the utilities specifically asserted in the instant specification, much less provide evidence sufficient to show that the above asserted therapeutic utilities would be considered "false" by a person of ordinary skill in the art.

As the Examiner recognized in the Office Action at page 6, the specification points out that the protein of the present invention ("t-PALP") should have similar biological activities and uses as t-PA. *See* page 2, line 33 to page 3, line 5; page 9, lines 20-28. Based on such asserted activities, and contrary to the Examiner's comments, the specification provides guidance to the skilled artisan to use the polypeptides of the present invention for the same purposes as t-PA, including but not limited to: (1) regulating clotting; and (2) treating many vascular diseases, such as stroke, deep-vein thrombosis, peripheral arterial occlusion, pulmonary embolism, and myocardiothrombosis. Applicants assert that such

characterization of the invention is sufficient to constitute a showing of utility. Further, the Examiner has neither provided evidence sufficient to show that the above asserted therapeutic utilities would be considered "false" by a person of ordinary skill in the art, nor presented countervailing facts and reasoning sufficient to establish that a person of ordinary skill would not believe the applicants' assertion of utility.

Further, in regard to these asserted therapeutic activities, Applicants note that there is no need to prove that a correlation exists between a particular activity and an asserted therapeutic use of a compound as a matter of statistical certainty or provide actual evidence of success in treating humans where such a utility is asserted. M.P.E.P. § 2107.02 (I) at 2100-33 to 2100-34. All that is required of Applicants is that there be a reasonable correlation between the biological activity and the asserted utility. *See Nelson v. Bowler*, 626 F.2d 853, 857 (C.C.P.A. 1980). Moreover, "[u]sefulness in patent law, and in particular in the context of pharmaceutical inventions, *necessarily* includes the expectation of further research and development. The stage at which an invention in this field becomes useful is well before it is ready to be administered to humans." *In re Brana,* 51 F.3d 1560, 1568 (Fed. Cir. 1995) (emphasis added).

Thus, Applicants submit that the asserted utilities for t-PALP are specific (*e.g.*, not every protein may be employed for treating vascular disease) and substantial ("the general rule [is] that the treatments of specific diseases or conditions meet the criteria of 35 U.S.C. § 101." (Revised Interim Utility Guidelines Training Materials, p. 6)). In addition, Applicants submit that these utilities are credible. Moreover, the Examiner has failed to provide evidence sufficient to show that these asserted utilities would be considered "false by a person of ordinary skill in the art. *See* M.P.E.P. § 2107.01(II)(A); Utility Examination Guidelines at 1098-99.

Applicants respectfully point out that their position coincides with that of the United States Patent and Trademark Office ("USPTO") as set forth in the recently published Revised Interim Utility Guidelines Training Materials. In particular, the USPTO's discussion of therapeutic proteins at pages 27-29 makes clear that the above disclosed utilities are specific and substantial. *See also* Example 10, "DNA Fragment encoding a Full Open Reading Frame (ORF)," at pages 53-55. Thus, in agreement with the USPTO's own commentary, and contrary to the Examiner's position, Applicants assert that the pending claims do indeed satisfy the utility requirement.

In view of the above, Applicants respectfully submit that the presently claimed invention possesses specific, substantial, and credible utilities which constitute patentable utilities under 35 U.S.C. § 101. Because Applicants' assertions of utility are sufficient to satisfy the requirements of 35 U.S.C. § 101, it is respectfully requested that the Examiner's rejection of the claims under 35 U.S.C. § 101 not be maintained in the instant continued prosecution application.

In addition, the Federal Circuit and its predecessor determined that the utility requirement of Section 101 and the how to use requirement of Section 112, first paragraph, have the same basis, *i.e.*, the disclosure of a credible utility. *See In re Brana*, 51 F.3d 1560, 1564, 34 U.S.P.Q.2d 1436, 1441 (Fed. Cir. 1995); *see also In re Jolles*, 628 F.2d 1322, 1326 n.11, 206 U.S.P.Q. 885, 889 n. 11 (CCPA 1980); *In re Fouche*, 439 F.2d 1237, 1243, 169 USPQ 429, 434 (C.C.P.A. 1971). As discussed above, the specification teaches specific, substantial, and credible utilities of the claimed invention, thereby enabling the skilled artisan to use the claimed nucleic acid molecules. Since the specification teaches how to use the claimed nucleic acid molecules with only routine experimentation and the specification describes specific and immediate utilities for the

claimed nucleic acid molecules, Applicants submit that the full scope of the claims is enabled. Accordingly, it is respectfully requested that the Examiner's rejection of the claims under 35 U.S.C. § 112, first paragraph, not be maintained in the instant continued prosecution application.

IV. Rejection of Claims 73-74 under 35 U.S.C. § 112, First Paragraph

In the previous Office Action, the Examiner rejected claims 73-74 under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention. (*See* Paper No. 23, Page 4 & 7). The Examiner further rejected claims 73-74 under 35 U.S.C. § 112, first paragraph, as allegedly not enabling one skilled in the art to make and/or use the invention commensurate in scope with the claims. In particular, the Examiner contends that the structure and function of the claimed polynucleotides "is not described."

Applicants respectfully disagree with the prior rejections. However, Applicants have canceled claims 73-74, thereby obviating any prior rejection of those claims.

With regard to new claims 76-182, Applicants assert that the claims fully meet the written description requirements of 35 U.S.C. § 112, first paragraph. *See, e.g.,* Section III(A) of the Response filed January 25, 2001. In particular, Applicants submit that one skilled in the art could reasonably conclude that Applicants had possession of the polynucleotides encompassed by claims 76-182, in the present application as filed. Applicants point out that "[t]he written description requirement does not require the applicant 'to describe exactly the subject matter claimed, [instead] the description must

clearly allow persons of ordinary skill in the art to recognize that [they] invented what is claimed,'" *Union Oil Co. v. Atlantic Richfield Co.*, 208 F.3d 989, 54 U.S.P.Q.2d 1227 (Fed. Cir. 2000). While the applicant must "blaze marks on trees," rather than "simply [provide] the public with a forest of trees," an Applicant is not required to explicitly describe each of the trees in the forest. *See Unocal*, 208 F.3d at 1000. *See also* M.P.E.P. § 2163.02 ("The subject matter of the claim need not be described literally (i.e., using the same terms or in haec verba) in order for the disclosure to satisfy the description requirement.").

Further, Applicants also assert that claims 76-182 fully meet the enablement requirements of 35 U.S.C. § 112, first paragraph. *See, e.g.,* Section III(A) of the Response filed January 25, 2001. In particular, one of skill in the art would not be required to conduct undue experimentation in order to make and/or use the claimed invention.

In view of the foregoing, Applicants submit that the pending claims fully meet the requirements of 35 U.S.C. § 112, first paragraph.

V. Rejection of Claim 74 under 35 U.S.C. § 112, Second Paragraph

In the previous Office Action, the Examiner rejected claim 74 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. (*See* Paper No. 23, Page 5). In particular, the Examiner contends that "the word 'further' renders the claim unclear."

Although Applicants respectfully disagree with this prior rejection, Applicants have canceled claim 74 in favor of claims 76-182, thereby obviating any prior rejection of claim 74.

In view of the foregoing, Applicants submit that the pending claims fully meet the requirements of 35 U.S.C. § 112, second paragraph.

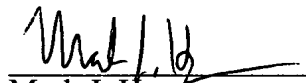
Conclusion

In view of the foregoing remarks, Applicants believe that this application is now in condition for allowance, and an early notice to that effect is urged. The Examiner is invited to call the undersigned at the phone number provided below if any further action by Applicant would expedite the examination of this application.

Finally, if there are any fees due in connection with the filing of this paper, please charge the fees to our Deposit Account No. 08-3425. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above or in the Petition for an Extension of Time submitted concurrently herewith, such an extension is requested and the appropriate fee should also be charged to our Deposit Account.

Respectfully submitted,

Dated: August 23, 2001



Mark J. Hyman Reg. No. 46,789
Attorney for Applicants

Human Genome Sciences, Inc.
9410 Key West Avenue
Rockville, MD 20850
Telephone: 240-314-1224

Enclosures